



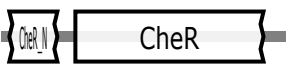


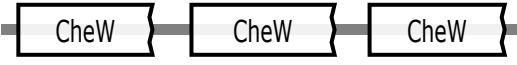



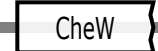

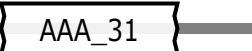


Table I: Chemosensory proteins of *V.cholerae*.

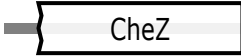

Cluster I/F9

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
VC_RS06750 (VC1394)		methyl-accepting chemotaxis protein	mcp	24H		signal input	GN
VC_RS06755	<i>frame shift</i>						
VC_RS06760 (VC1396)		hypothetical protein				unknown	GN
VC_RS06765 (VC1397)		chemotaxis protein CheA	chea	F9		signal processing	CC
VC_RS06770 (VC1398)		response regulator	chey			signal output	GN
VC_RS06775 (VC1399)		protein-glutamate O-methyltransferase CheR	cher	F9		adaptation	GN, CC
VC_RS06780 (VC1400)		hypothetical protein				unknown	GN
VC_RS06785 (VC1401)		chemotaxis protein CheB	cheb	F9		adaptation	GN, CC
VC_RS06790 (VC1402)		chemotaxis protein W	chew			scaffold	GN, (Briegel et al., 2016)

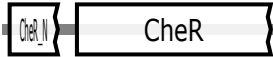




Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS06795</a> (VC1403)		methyl-accepting chemotaxis protein	mcp	44H		signal input	GN, (Briegel et al., 2016)

## Cluster II/F6

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS09920</a> (VC2059)		chemotaxis protein CheW	chew			scaffold	GN, (Butler and Camilli, 2006)
<a href="#">VC_RS09925</a> (VC2060)		chemotaxis protein CheW	chew			localization	GN, (Ringgaard et al., 2018)
<a href="#">VC_RS09930</a> (VC2061)		ParA family protein				localization	GN, (Ringgaard et al., 2018)
<a href="#">VC_RS09935</a> (VC2062)		chemotaxis response regulator protein-glutamate methylesterase	cheb	F6		adaptation	CC, GN
<a href="#">VC_RS09940</a> (VC2063)		chemotaxis protein CheA	chea	F6		signal processing	CC












Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS09945</a> (VC2064)		protein phosphatase CheZ	chez	F6		signal termination	CC, GN
<a href="#">VC_RS09950</a> (VC2065)		response regulator	chey			signal output	GN












#### Cluster II/F6 - associated







Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS10640</a> (VC2201)		protein-glutamate O-methyltransferase	cher	F6		adaptation	CC
<a href="#">VC_RS10645</a> (VC2202)		chemotaxis protein CheV	chev	F6		adaptation	CC
<a href="#">VC_RS07755</a> (VC1602)		chemotaxis protein CheV	chev	F6		adaptation	CC
<a href="#">VC_RS09650</a> (VC2006)		chemotaxis protein CheV	chev	F6		adaptation	CC
<a href="#">VC_RS17860</a> (VCA0954)		chemotaxis protein CheV	chev	F6		adaptation	CC

#### Chemoreceptors away from cluster (prediction)

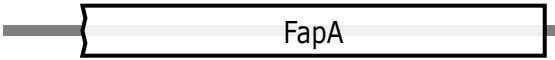
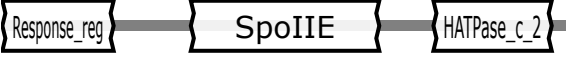
Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS01060</a> (VC0216)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS01370</a> (VC0282)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS02285</a> (VC0449)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS02600</a> (VC0512)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS02610</a> (VC0514)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS04105</a> (VC0825)	<i>tcpl</i>	toxin-coregulated pilus methyl-accepting chemotaxis protein Tcpl	mcp	40H		signal input	CxH
<a href="#">VC_RS04180</a> (VC0840)	<i>acfB</i>	methyl-accepting chemotaxis protein AcfB	mcp	40H		signal input	CxH
<a href="#">VC_RS06095</a> (VC1248)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS06290</a> (VC1289)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS06325</a> (VC1298)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH




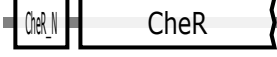

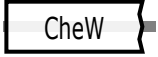
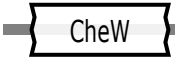
Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS06400</a> (VC1313)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS06800</a> (VC1405)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS06835</a> (VC1413)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS07420</a> (VC1535)*		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS07960</a> (VC1643)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS08970</a> (VC1859)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS09015</a> (VC1868)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS09155</a> (VC1898)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS09470</a> (VC1967)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS10385</a> (VC2161)	<i>mlp24</i>	methyl-accepting chemotaxis protein Mlp24	mcp	40H		signal input	CxH, (Nishiyama <i>et al.</i> , 2012)
<a href="#">VC_RS11750</a> (VC2439)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS13460</a> (VCA0008)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS13555</a> (VCA0031)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS13710</a> (VCA0068)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS14190</a> (VCA0176)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS14390</a> (VCA0220)	<i>mlp30</i>	methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS14605</a> (VCA0268)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS16535</a> (VCA0658)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS16555</a> (VCA0663)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS17050</a> (VCA0773)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS17645</a> (VCA0906)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS17720</a> (VCA0923)	<i>mlp37</i>	methyl-accepting chemotaxis protein Mlp37	mcp	40H		signal input	CxH, (Nishiyama <i>te al.</i> , 2016)

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS17940</a> (VCA0974)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS17965</a> (VCA0979)*		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS18015</a> (VCA0988)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS18220</a> (VCA1034)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS18325</a> (VCA1056)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH
<a href="#">VC_RS18380</a> (VCA1069)		methyl-accepting chemotaxis protein	mcp	40H		signal input	CxH

### Cluster III/F7

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS18450</a> (VCA1085)		DUF342 domain-containing protein				unknown	GN, (Ortega et al., 2019b)
<a href="#">VC_RS18455</a> (VCA1086)		SpoIIE family protein phosphatase				unknown	GN, (Ortega et al., 2019b)

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS18460</a> (VCA1087)		STAS domain-containing protein				unknown	GN, (Ortega et al., 2019b)
<a href="#">VC_RS18465</a> (VCA1088)		methyl-accepting chemotaxis protein	mcp	24H		signal input	GN
<a href="#">VC_RS18470</a>		frame shift					
<a href="#">VC_RS18475</a> (VCA1090)	<i>cheD</i>	chemoreceptor glutamine deamidase CheD	ched	F7		adaptation	CC, GN
<a href="#">VC_RS18480</a> (VCA1091)		protein-glutamate O-methyltransferase CheR	cher	F7		adaptation	CC, GN
<a href="#">VC_RS18485</a> (VCA1092)		HAMP domain-containing protein	mcp	36H		signal input	GN, CxH, (Greer-Phillips et al., 2018), (Ortega et al., 2019b)
<a href="#">VC_RS18490</a> (VCA1093)		purine-binding chemotaxis protein CheW	chew			scaffold	GN
<a href="#">VC_RS18495</a> (VCA1094)		purine-binding chemotaxis protein CheW	chew			scaffold	GN



Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS18500</a> (VCA1095)		chemotaxis protein CheA	chea	F7		signal processing	CC, GN
<a href="#">VC_RS18505</a> (VCA1096)		response regulator	chey			signal output	GN

#### Chemoreceptors away from cluster III (prediction)

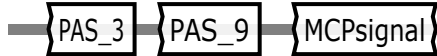

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS00480</a> (VC0098)		methyl-accepting chemotaxis protein	mcp	36H		signal input	CxH

#### Other chemotaxis proteins

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS01890</a> (VC0377)		chemotaxis protein CheX	check			adaptation	
<a href="#">VC_RS05320</a> (VC1083)		chemotaxis protein CheC	check			adaptation	
<a href="#">VC_RS05860</a> (VC1197)		DUF3334 family protein	other			unknown	

#### Other chemoreceptors

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
-------------------	-----------	---------	------	-------	-----------------------	------	---------------------

Locus (old locus)	Gene name	Product	Type	Class	Domain Architecture**	Role	Assignment evidence
<a href="#">VC_RS06805</a> (VC1406)		PAS domain S-box protein	mcp	24H		signal input	
<a href="#">VC_RS17440</a> (VCA0864)		PAS domain S-box protein	mcp	24H		signal input	

\* Protein found in newer version of the genome.

\*\* Domain architecture prediction was taken from MiST3(Gumerov *et al.*, 2020). Transmembrane regions are marked in blue.

**Abbreviations:** CC - Chemotaxis classification with HMM models, CxH - Chemotaxis class vs Heptad class, GN - Gene neighborhood.